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NORTHEASTERN RESEARCH NOTES

NORTHEASTERN FOREST EXPERIMENT STATION

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LARGE-SCALE AIRPHOTOS TESTED IN FOREST SURVEY, PROVE UNSATISFACTORY

Since we use aerial photos in forest survey work, we were interested in reports about the Sonne camera, which takes continuous-strip photos at large scales. In this camera a ribbon of film is passed across a fixed slit at the focal plane; the speed of the film is synchronized with the speed of the aircraft.

Recently we had an opportunity to study aerial photos taken with a Sonne camera. The Air Survey Corporation of Washington, D. C., and the Aero Survey Corporation of Philadelphia provided the photos for the study. One area had been photographed in July, the other in December; this gave us a chance to compare summer and winter photos. The general quality of the photos was good for both areas.

We made tests on photo scales ranging from 1 inch = 100 feet to 1 inch = 1,800 feet. Photo interpreters examined photos of various scales

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and estimated timber volume, measured tree heights and crown diameters, and identified tree species. These observations were checked on ground plots.

Unexpectedly, the accuracy of the interpretations from the large-scale photos was not much better than that commonly obtained from conventional, small-scale photography. Further study, however, cleared up some of our puzzlement over the results, and pointed up some deficiencies in large-scale photography.

Photo scale is variable on Sonne photos. Film speed is difficult to keep synchronized with ground speed because of fluctuations in ground elevation and flying height. Such distortions can create serious errors. Even more important is the effect of tree height on large photo scales. If scale at ground is 1 inch = 100 feet, then scale at top of 50-foot trees is 1 inch = 89 feet, and scale at top of 100-foot trees is 1 inch = 76 feet. These fluctuations in photo scale cause serious errors in photo interpretation.

The winter pictures were exposed to resolve the dark ground. Thus the lighter tree tops were overexposed. Tree measurements were difficult to make, sometimes impossible. If there had been snow on the ground, the results would have been better.

The summer pictures caught the trees in full foliage, and at large scales that is a hindrance. We could not see the tree trunks or the ground. Individual trees could not be distinguished by crowns alone, especially in dense stands.

The photo interpreters who took part in this study were thoroughly experienced with smaller-scale photos, but had had no experience with large photo scales. Men thoroughly experienced with large-scale photos no doubt could get better results from them.

In forest survey work, the large-scale photos as now taken with the Sonne camera apparently have no advantage over conventional small-scale photos. However, if the photos were taken when there is snow on the ground, and if photo interpreters became experienced enough with large-scale photography that they could overcome scale distortions, then this type of aerial photography could be used in forest survey work.

--EARL J. ROGERS

RABBITS DAMAGE METASEQUOIA PLANTINGS AT BELTSVILLE, MD.

Several small plantings of Metasequoia (Metasequoia glyptostroboides)--the species that had been thought extinct until living specimens were found in China a few years ago--were made at the Beltsville Experimental Forest in the spring of 1950. The trees were planted on several sites in the forest and in the nursery.

At the end of the 1951 growing season the average height and growth were as follows:

Site	Total height (inches)	1951 growth (inches)
River bottom (hardwood overstory)	10.9	4.3
River bottom (pine overstory)	8.8	2.2
Sandy soil (beech overstory)	9.9	3.8
Nursery	24.4	19.0

Metasequoia grown at other places (for example, Morris Arboretum) have made much better growth. The best growth at Beltsville was in the nursery, where the seedlings were cultivated and watered. It appears that Metasequoia should be planted on fairly moist sites relatively free of competing vegetation.

Rabbits seem to be the most serious enemy of Metasequoia in the Beltsville area. Of 43 trees planted, 27 were injured and 5 were killed by rabbits during the winter. The tree does have the ability to recover following severe injury by rabbits. In one case the entire top of a tree was clipped off, leaving a 3-inch stub above ground. A new shoot developed and grew 14 inches by the end of the growing season.

--M. J. WILLIAMSON